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INCOME SMOOTHING IN ACCOUNTING AND BUSINESS LITERATURE PRIOR TO 1954

Abstract: The origin of income smoothing in literature has been attributed to different authors in recent years. However, the attributions have been made based on research using a simple analysis of the term "income smoothing". This study considers the modern concept of income smoothing rather than simply the term itself. Using this approach, income smoothing is either explicitly or implicitly recognized and discussed in literature long before the aforementioned authors. A lack of awareness has been the primary reason for modern income smoothing research overlooking the earlier literature on the subject. This awareness can be ascribed to weak citation analysis. Therefore, researchers should be more cautious in how they use citation analysis.

INTRODUCTION

Several authors in recent years have made explicit references to the origin of income smoothing in literature. Cushing [1969], Dascher and Malcom [1970], and Imhoff [1981] made statements that Gordon, Horwitz and Meyers [1966] were the authors of the first empirical study of income smoothing. Imhoff [1981] also identified Hepworth's article [1954] as being the first theoretical discussion of income smoothing. Archibald [1967], Ronen, Sadan and Snow [1977], Eckel [1981], Gamble and O'Doherty [1985], and Dharan [1987] attribute the origin of the recognition of income smoothing to Hepworth [1953], and White [1970] attributes the smoothing hypothesis to Gordon [1964]. None of these attributions are correct if the concept of income smoothing rather than the term, *income smoothing*, is considered. Modern authors generally take the broad-based, flexible view that income smoothing is management action

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taken with the intent of reducing the volatility of publicly reported accounting income.[1] Management may engage in *"accounting"* or *"artificial"* smoothing which is, given the non-accounting results of operations, the selection of accounting methods that will reduce the volatility of the reported accounting income time-series. Or management may engage in *"real"* smoothing which includes all other non-accounting management action having the objective of minimizing the volatility of reported accounting income.

There were references to the smoothing properties of various accounting practices as early a the late nineteenth century.[2] Furthermore, Johnson and Meade [1906], Warshaw [1924], Paton [1932], Cotter [1940], and Devine [1942] all discussed the theoretical implications of smoothing, and Miller [1944] tested for smoothing behavior many years before Gordon, Horwitz and Meyers [1966] conducted their study. The most important cause of post-1965 authors' failure to recognize earlier discussions of the smoothing properties of certain accounting methods and the benefits obtained from less volatile accounting income time-series is that the specific term *"income smoothing"* probably was not used prior to 1950. The Appendix identifies the various terms that authors of the literature reviewed in this article used to describe management action to reduce fluctuations in accounting income. Notice in the Appendix that Miller [1944] used the term *"profit smoothing,"* but the specific term, *"income smoothing"* is not used in the publications reviewed in this article until Moonitz used it in 1953, the same year it was used by Hepworth. This suggests that the term may have been used in some earlier publication not reviewed in this article or that the term may have entered the literature via an academic conference shortly before 1953. Even though use of the term *"income smoothing"* is not historically accurate, it is used throughout this paper as a substitute for those terms identified in the Appendix to describe the effect of reducing the volatility of income time-series.

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[1] See for example, Doupnik and Evans [1988], Moses [1987], Trueman and Titman [1988], and Hand [1989].

[2] The term *"accounting practices"* as used in this paper includes all of the various accounting techniques that might be used to reduce the volatility of reported accounting income time-series. These include, for example, changes in accounting estimates, judgments about accruals such as the allowance for bad debts, and recognition and classification of extraordinary items.

This paper documents a frequent and continuing recognition of income smoothing properties and management preferences for smooth accounting income time-series in accounting and business literature from the beginning of the twentieth century up to the publication of Hepworth's 1953 article. Exhibit I lists thirty-four works from 1893 to 1953 which contain some sort of reference to the smoothing properties of an accounting method or to an accounting practice used in such a way as to dampen the fluctuations of reported income.

The literature reviewed in this study was identified by citation analysis of Devine [1942] supplemented by the collection of references to the smoothing of earnings noted in the course of other historical research by the author. Thus, only a portion of the body of accounting literature was examined in the identification of these references and that portion of the literature does not constitute a systematically-selected random sample. Therefore, the author does not infer that the 1893 reference in this paper is the earliest consideration of income smoothing in the literature. Nor can one make inferences about the relative frequency with which income smoothing was considered in the pre-modern literature. Enough references are identified, however, to state with certainty that consideration of income smoothing was common. Also, it is not too unreasonable to assume that the relative frequencies of classifications in Exhibit I are representative of the appearance of income smoothing considerations in the literature as a whole.

The headings of Exhibit I reflect the context within which income effects are discussed. Even though depreciation and other revenue and expense items are *"income related incentives,"* to the extent that they are classified under the *"Secret Reserves"* heading, they are so classified because the focus of the source publication is on the balance sheet.

The review of the literature that follows is organized by the context within which smoothing is discussed. The first section of the literature review is a discussion of papers that focus on the balance sheet and secret reserves that result in reducing the volatility of income time-series. The second section examines the LIFO base-stock inventory method debate as it related to income smoothing. The focus of the literature shifted from the balance sheet to the income statement during the period that LIFO was being discussed extensively. The final section of the literature review discusses the use of statistical analysis in the literature that is reviewed. In general, the type and frequency of

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EXHIBIT I

Context of Income Smoothing by Reference and Accounting Method

Reference	*Secret Reserves*			*Income Related Incentives*	
	Capital vs. Revenue Expenditures	Depreciation	Other	LIFO and Other Base-Stock Inventory Methods	Other
Matheson (1893)	X				
Dicksee (1895)	X				
Dicksee (1903)		X	Bad debts and other reserves		
Johnson and Mead (1906)	X				
Dickenson (1907)	X				
Knight (1908)		X	Bad debt reserves, Contingencies, Carrying inventory below cost, Classing "Reserves" as Accounts Payable		

EXHIBIT I (CONTINUED)

Reference	*Secret Reserves*			*Income Related Incentives*	
	Capital vs. Revenue Expenditures	Depreciation	Other	LIFO and Other Base-Stock Inventory Methods	Other
Joplin (1914)			Writing down assets, Contingencies, Valuing inventories at lower than cost, Reserves classified as accounts payable		
Page (1916)		X	Base stock inventory methods		
Paton and Stevenson (1918)			X		
Washaw (1924)				X	
Crunder and Belcher (1930)					Depreciation, Amortization of Extraordinary Losses
Nash (1930)					Depreciation
Polak (1930)					Depreciation
Dicksee (1931)	X	X			Contingencies, Goodwill

EXHIBIT I (CONTINUED)

Reference	*Secret Reserves*			*Income Related Incentives*	
	Capital vs. Revenue Expenditures	Depreciation	Other	LIFO and Other Base-Stock Inventory Methods	Other
Paton (1932)					Charges to "surplus," Depreciation, depletion and similar accruals
Kohler (1933)					Charges to "surplus"
Daniels (1934)					Depreciation
Anderson (1935)					Charges to "surplus," Reserve accounts
Davis (1937)				X	
Sweet (1937)				X	
Nicherson (1937)				X	
Committee on Federal Taxation, American Institute of Accountants (1938)				X	
Sanders, Hatfield, and Moore (1938)				X	Reporting inventories at other than ledger amounts, contingency and future loss recognition
Gilman (1939)				X	

EXHIBIT I (CONTINUED)

Reference	*Secret Reserves*			*Income Related Incentives*	
	Capital vs. Revenue Expenditures	Depreciation	Other	LIFO and Other Base-Stock Inventory Methods	Other
Cotter (1940)				X	
Committee on Accounting Procedure (1942)					Reserves for war contingencies
Devine (1942)				X	
Miller (1944)					Reserves for war contingencies
Committe on Accounting Procedure (1946)					Reserves for war contingencies
Committee on Accounting Procedure (1947 A)					General purpose contingency reserves
Committee on Accounting Procedure (1947 B)					Inventory reserves
Kohler (1947)	X				
Stans (1948)					Reserves
Moonitz (1953)				X	

use of empirics corresponds with that found by Buckmaster and Theang [1991] in their study of pre-1950 empiricism in accounting literature. However, most of this description of empiricism is directed toward Miller's [1944] formal tests for income smoothing. Miller's article is far more "modern" in its use of inferential statistics than any of the work included in the Buckmaster and Theang sample. A discussion of some of the implications of recognition of the early income smoothing literature follows the literature review. The paper closes with some speculation on the determinants of GAAP that are consistent with the literature review and some comments on the use of citation analysis in accounting history research.

SECRET RESERVES

The first use of the term, *income smoothing*, that is found in this study did not occur until the mid-twentieth century. Perhaps the term was not used earlier because the balance sheet was the primary focus of the early references. Yet consideration of the impact of methods and practices on the "profit and loss account" generally crept into discussions. In England, there was a widespread attitude among investors that accounting income for a period measured the proper amount of resources to be distributed as dividends for that period and corporate directors apparently felt pressure to make such distributions [Johnson and Meade, 1906; Yamey, 1960]. One way that management reduced pressure for dividend distributions was to create a *reserve fund* by charging *"Earned Surplus"* (appropriated retained earnings). But these *reserves* were obvious to the reader of a balance sheet, so management created *secret reserves* in order to avoid distributing firm assets as dividends. Dicksee [1903, p. 49] defines a *secret reserve* as being created when "a Reserve is deliberately accumulated in excess of the estimated loss that is likely to occur under that particular heading." Joplin [1914, p. 409] commented a few years later that "the chief reason [for secret reserves] is to provide, out of excessive profits of prosperous years, a fund which can be drawn upon to increase the profits of less prosperous ones the idea being to prevent fluctuation in the affairs or standing of the company, and to obtain as nearly as possible a uniform status of conditions." Joplin's objective in his article was to discuss the auditors' responsibility with regard to secret reserves. He felt that such practices were necessary to avoid excessive dividend payments, but that the auditors should

disclose the existence of such *reserves*. Otherwise stock would be undervalued and current stockholders deprived of their due return.

Secret reserves were created by crediting a contra asset account, a liability, or by failing to record assets and/or writing them off as expenses or directly to surplus (retained earnings). The underlying assumption giving rise to this practice was the idea that this "excess" of net assets represented assets that could be distributed without affecting in the current level of operations, but if these assets were distributed there would be no cushion in less prosperous years for dividends. This idea of relating dividend payments to current income was apparently retained by some managers and accountants for a surprisingly long time. As late as 1942, The Committee on Accounting Procedure [1942] deemed it necessary to state that reserves for war contingencies were not to be used for smoothing income in order to equalize dividends.

Recording unusually large amounts of depreciation in good years was one way of creating *secret reserves*. Matheson [1893, p. 44] observes, "while in average or normal years of working a moderate rate of depreciation may suffice for mere physical deterioration, advantage should be taken of prosperous years to write down liberally [through depreciation charges] the book value of the plant." Joplin [1914] also comments on excessive write-downs of assets as a method of creating secret reserves. Matheson [1893] indicated that the railroads tended to recognize depreciation in proportion to income and to omit depreciation in years with low earnings. Paton and Stevenson [1918, p. 509] also noted this practice because "a rather even flow of income is desired by security holders," but that the ICC had forced railroads to adopt a regular depreciation charge. Knight [1908, p. 191] emphasizes the importance of systematic depreciation and warns that there should be "no omission of [depreciation] charges because profits happen to run exceptionally low" in his general, normative discussion of depreciation. Knight's [1908] and Dicksee's [1903] rationale was that systematic charges were necessary to insure that sufficient funds were available for plant and equipment replacement. Dicksee [1903, p. 3] went a bit further. In a seemingly contradictory position to those that suggested varying depreciation in proportion to income, he stated, "By no other means [systematic and reasonable depreciation] is it possible to reasonably assure a fairly stable income, revenue, or profit, that may properly be divided, or

otherwise taken out of the business, without detriment to its continued permanence." However, varying depreciation in proportion to income was still considered desirable by some accountants many years later. Nash [1930] argued that the reserve-recognition depreciation method was superior to straight-line depreciation because the flexibility in computing charges against income permitted public utilities more stable income and the ability to maintain credit.[3] He maintained that the more stable income results in lower investment risk and more stable employment. This reduced risk and more stable employment permits reduced cost of capital and labor costs which, in turn, leads to lower cost to utility customers.[4] Note that the focus of Nash's analysis is more modern than previously cited papers in that the discussion is on the income effects rather than secret reserves.

Two additional papers [Crunder and Belcher, 1930; Polak, 1930] presented at the 1929 International Congress also had an income measurement orientation and recognized the smoothing properties of depreciation. Polak recommended increased depreciation charges in good years, but insisted that regular depreciation charges continued to be made in bad years. Crunder and Belcher advocated systematic depreciation charges independent of revenue charges and saw the smoothing benefit arising from spreading the replacement cost over the estimated useful life of the assets as opposed to charging the entire cost of the asset to expense in the year of acquisition. Also, Crunder and Belcher classified extraordinary losses as *extraordinary depreciation* and indicated that telephone companies typically charged such losses to *Suspense* and amortized them over a number of years in order to minimize the impact of such losses on a single period.

Paton [1932, p. 261] reiterated the position that he and Stevenson had taken in 1918 against varying depreciation charges in order to smooth income. One of the five accounting problems of the Depression identified by Paton was preferential

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[3] Littleton, *et al.* [1929] noted that Nash attributed the underlying assumption supporting retirement reserve systems to be flexibility permitting stability of income and maintenance of credit in their review of papers presented at the 1929 Congress.

[4] Daniels [1934] explicitly identified The Detroit Edison Company as a company following the policy of varying depreciation with income during this later period.

recognition of operating expenses. He attacks the practice of recognizing "depreciation and similar accruals only when income is high enough to maintain previous levels." In the next issue of the *Accounting Review*, Kohler [1933] compared the position that Paton had taken in this article with the position Hoxey had taken in a speech before Massachusetts accountants. While Paton opposed writedowns of assets in order to "make fat years pay for lean," Hoxey favored charging the decline in value due to price changes directly to earned surplus and putting other value losses in a "deferred depreciation" account and removing the deferral when the firms' become more prosperous. Kohler is skeptical of Hoxey's proposals and agrees with Paton that businesses' volatility should not be obscured by accounting methods. Kohler's is most concerned, however, with the widespread practice of using direct charges to earned surplus to manage accounting income.

The literature indicates that, to say the least, firms were extremely flexible in capitalize/expense decisions for plant and equipment-related costs. Dicksee [1895] takes exception to firms' practice of expensing repairs in the early periods of use of plant and equipment and, when major repairs are required, capitalizing and depreciating the cost of the repairs over a period of several years. At the turn of the century, maintenance (repairs) of railroads was frequently included in capital accounts of English railroads. Johnson and Meade [1906] accuse western U.S. railroads of just the opposite — the tendency to charge large amounts of capital expenditures to expense in periods of high profits. They admitted that such a practice might be justified to avoid the demands of stockholders for dividends, but were indignant because they believed that the primary incentive for the practice was to manipulate securities prices. Dickenson [1907] was another author that was particularly concerned with the flexibility of railroad maintenance and repair costs. He called for regulatory guidance and noted that, not only were these costs a significant portion of railroad costs, but such costs could be particularly effectively used for manipulating accounting profits.

Johnson and Meade [1906] were unusual among the references in this paper in that they discussed real smoothing as well as accounting smoothing. They noted that it was a practice around the turn of the century for some railroads, particularly railroads in the South, to vary repairs with profitability. The railroads in question followed the practice of overly extensive

repairs in good years and inadequate repairs in bad years. Devine [1942] provides the only other identification of a real smoothing practice in this paper; that of altering the level of manufacturing operations in order to smooth income.

Goodwill amortization provided another convenient smoothing device. Matheson [1893, p. 27] suggested goodwill as "a legitimate object to which to apply the surplus profits of a prosperous year." Joplin [1914] indicated that firms also create secret reserves by making excessive provision for bad debts and by valuing inventories at below cost. Dicksee [1931] suggested that accounting practices can be used to minimize bad times. Dicksee suggested that "the ups and downs of the firm" can be minimized if the firm provides adequate *"reserves"* for future *"losses"* by charges to income when times are good. He implied that this is necessary to avoid euphoria and weakening of managerial control.

Arthur Andersen [1935] took exception to firms using *"Reserves for Contingencies"* to smooth income. This is opposite to the position taken by Dicksee [1931]. The shifting focus from the Balance Sheet to the Income Statement might account for a portion of the divergence of positions. Even when Dicksee discussed smoothing practices, he was primarily concerned with Balance Sheet accounts and avoiding dividend distributions that might impair the position of the firm as a going concern. Andersen, on the other hand, was concerned that accounting report the results of transactions and explicitly stated that *"equalizing"* earnings is misrepresentation.

The Committee on Accounting Procedure [1942, p. 116] took an official position against using *Reserves for War Contingencies* as a smoothing device with their statement in *Bulletin No. 13*, "It has long been established in accounting that reserves may not be used for the purpose of arbitrarily equalizing the reported income of different accounting periods." The Committee also invoked this prohibition in *Bulletin No. 26* [1946], by specific reference to *No. 13*.

Most likely as the result of the shifting emphasis from the Balance Sheet to the Income Statement, the term, *"secret reserves"* seems to have been abandoned for the most part by the 1930s. For example, Sanders, Hatfield, and Moore [1938, p. 16] discuss some practices that had traditionally been identified with creating secret reserves, but these practices are referred to as practices "undertaken for the purpose of averaging profits over the years, so as to make a better showing in the lean years

than the facts warrant." The specific practices referred to by Sanders, *et al.*, were valuing inventories at less than ledger amounts, combining part of *"surplus"* with Accounts Payable, and charging contingency reserves with large amounts.

Consider the previous discussion and findings in relation to a recent assertion in the historical literature: Dailey [1984] identified income smoothing as one of the elements of his *"Proactive Phase"* for the period, 1931-1940, but not for the period, 1900-1931 or for the periods following 1940. This assertion is in error since it appears that income smoothing was as important during the earlier period or later periods as it was in the 1931-1940 period. A careful reading of Dailey's text suggests that this inference was drawn from Paton's 1932 article on accounting problems during the Depression. The methods to which Paton was objecting are those same methods that are discussed extensively in the pre-1930 publications cited in this paper.

LIFO AND OTHER BASE-STOCK INVENTORY METHODS

The Warshaw [1924] article was explicitly directed towards promoting a base-stock inventory method because of its smoothing properties.[5] The article had as the central theme, income measurement, and utilized real data. Warshaw identified several incentives for income smoothing that result from using a "normal stock" inventory method. He suggested the conventional incentives of stockholder and creditor satisfaction, but emphasized the idea that the smoothing properties of base-stock inventory methods would dampen business cycles. The argument is:

> The leveling of inventory gains and losses, with the comparative stability of yearly profits which this method brings about ... exerts a subconscious effect upon business policy which is very desirable. Prices of manufacturing articles are kept in more proper relation to prices of raw material. The management is not elated by apparent profits or depressed by apparent losses. Such elation and depression are responsible for most business follies. The normal stock inventory auto-

[5] Page [1916] was actually the first of the references in this paper to promote base-stock inventory methods because of their income smoothing effects, but his discussion was framed in terms of avoiding having to report fluctuations in inventory profits. His paper reflects a myopic focus on capital maintenance and avoiding the distribution of inventory profits as dividends.

> matically creates a reserve that strengthens the basis for credit, gives stability, and makes expansion safe. Moreover, it has the great advantage of being a concrete suggestion for mitigating the severity of business cycles [Warshaw, 1924, p. 34].

Warshaw used the business cycle idea to argue that base-stock inventory methods should be acceptable for income tax purposes since, if tax rates are stable, the same amount of taxes will be collected over time.

Some years later, Davis [1937] repeated some of Warshaw's arguments for base-stock inventories. These incentives are stockholder satisfaction, better management decisions, and tax savings. Davis added the reduction in stock market volatility to the list of incentives. However, his arguments about management decisions and tax savings went further than Warshaw's. Davis' management decision argument revolved around the timing and amount of dividends. FIFO companies show larger profits in periods of rising prices (assuming no change in production). Stockholders expect dividends from these higher profits, but more cash is required to maintain the more costly inventories. Therefore, no cash is available for dividends except in periods of large losses which leads to under-distributions of dividends and excessive investment in production facilities by firms.

Davis extended the tax savings idea through consideration of inequitable taxes and taxes on undistributed earnings. There was no "loss carryback or carryover" provision in 1937, when he pointed out that companies would have to pay more taxes (unjustly) because methods acceptable for tax purposes cause many firms to move from high profitability to loss years back to high profitability; obviously, smoother income would decrease the total tax bill for these companies. In addition, there was an undistributed profits surtax in 1937 which resulted in inventory profits being taxed even though distribution of this portion of the income would be from operating capital.

The AIA Committee on Taxation [1938] made an explicit, direct appeal to the Treasury Department for tax law revisions that would permit more industries to use LIFO. The Committee's rationale was that any method that minimizes fluctuations in tax collections without affecting total collections should be acceptable. They pointed out that LIFO had this effect by removing inventory profits and producing a steadier stream of profits.

Cotter's *Fools Gold* [1940] was an extensive elaboration of the ideas in Warshaw [1924] and Davis [1937]. The book originally appeared as a series of articles published in *Barron's* in August and September of 1939. Cotter's objective was to demonstrate the economic advantages of the smoothing properties of LIFO. The primary advantages he attributed to the smoother income time series were: (1) dampening of business cycles, (2) avoidance of over-expansion of credit, (3) avoidance of demands for excessive dividends by stockholders in prosperous times, and (4) better information for pricing decisions by management.

Nickerson [1937] was another supporter of base-stock inventory methods because of their smoothing properties. However, he objected to base-stock methods because original cost was not disclosed and described a "reserve" method which he felt would provide the benefits of both proper disclosure and the income smoothing properties of base-stock methods.

Sweet [1937], in response to Davis, rejected Davis' contention that base-stock inventory methods were useful for determining dividend policies. Since the usefulness of base-stock methods was attributed solely to their smoothing properties, Sweet rejected income smoothing as being relevant to dividend policy. He asserted that an important function of management was to formulate a sound dividend policy over a number of years, not a policy dependent on a single year's income. Gilman [1939] falls into the *"opponent"* category of those discussing base-stock inventory methods. He attributed the origin of this family of methods to the desire to *"stabilize"* income, but saw no merit to smoothing, hence the base-stock methods, other than to reduce taxes. Devine was another author that was skeptical of the merit of the smoothing properties of base-stock inventory methods. His book, *Income Valuation and Periodic Income* [1942], was intended to be a normative evaluation of inventory methods and the methods' impact on accounting income; however, he did not take a position on the merit of the methods. Accordingly, he reviewed the merits of base-stock inventory methods suggested by others.[6] He was skeptical of most of the suggested benefits of smoothing, particularly those benefits re-

[6] Devine also indicated that the use of inventory market values in the extractive industries, percentage-of-completion accounting, and the timing of inventory markdowns are practices used to smooth income.

lating to dampened business cycles and improved management. Devine did suggest that since the market seems to discount accounting income time-series in setting market prices, smoother income will result in more stable securities prices.

Moonitz [1953] vigorously attacked the use of LIFO taking the position that all of the original arguments in favor of LIFO were no longer valid by 1953. Although he did admit that firms could reduce their tax bill through the use of LIFO's smoothing effect, he was opposed to such "nonexistent stability" of earnings and inventory. In addition, he opposed the unjust shifting of the tax burden to FIFO users.[7]

The clustering of references around the Treasury Department's acceptance of LIFO for tax purposes and the change in tone after the acceptance is consistent with a modified statement of Watts and Zimmerman's "Market for Excuses" [1978]. The modified hypothesis is that a determinant of the content of accounting literature (theories) is the self-interest of those affected by accounting. The finding in this paper about some of the early smoothing literature is consistent with this modified "market for excuses" hypothesis; particularly because the base-stock references cluster around the 1939 tax ruling that made LIFO an acceptable income tax practice. Those articles and books preceding the acceptance of LIFO for tax purposes argued the merit of base-stock inventory methods with one exception. Those works favoring base-stock methods recognized the tax effect, but their primary appeal was to the public good through cycle-dampening and rational management. After the acceptance of LIFO for tax purposes, three of the four authors that recognize the smoothing effects are, at best, skeptical of the merit of base-stock inventory methods. Sanders, Hatfield, and Moore [1938] were a fourth set of authors who imply that base-stock methods exist in order to smooth income, but they do not make any evaluative comment.

[7] It is interesting to note that Moonitz gave the effect on accounting-income-based management bonuses and potential violation of bond covenants as reasons why companies continued using FIFO rather than LIFO. This is, of course, twenty-five years before Watts and Zimmerman [1978] proposed the "management bonus hypothesis" and the "bond covenant hypothesis."

EMPIRICISM

Warshaw [1924] was the first of the authors referenced to use real data.[8] National Lead Company used the base-stock inventory method over a period that included 1913-1923. Annual profits of National Lead from 1915 through 1923 were compared with what they would have been if "average cost" and lower-of-cost-or-market had been used in inventory. Also, National Lead inventory and income time-series were compared with those of "10 large industrial companies which suffered inventory losses in the year 1921." Crunder and Belcher [1930] were the next authors to use actual data in their work. Various statistics on the depreciable assets of U.S. telephone companies were used in their extended discussion of estimating useful lives and adequacy of depreciation reserves. Cotter [1940], like Warshaw, used some descriptive statistics to make his points and relied heavily on National Lead Company's financial statements. Davis [1937] also used real data to bolster his argument for base-stock inventory methods as a smoothing device. He draws upon the (graphic) relationship of reported income and inventories from 1926 through 1934 to illustrate the effect of price movements on reported accounting income.

Daniels' [1934] monograph was a survey of the annual reports of 294 corporations with the object of identifying financial accounting practices. He observed depreciation charges varying with levels of income as well as several other earnings management practices. Some of these other practices such as the write-down of plant assets and arbitrary charges to "surplus" probably would have the effect of smoothing income as well as increasing income, but Daniels does not comment on the smoothing effect of practices other than that of varying depreciation charges with income.

Miller's article, "Reserves for War Contingencies and Post-war Adjustments" [1944], is important in both the history of income smoothing and empiricism in accounting literature. The article is apparently unknown by modern authors of income smoothing studies, but it appears to be the seminal modern income smoothing study. Miller's primary objective was to test for the use of *Reserves for War Contingencies* as a profit smoothing device and to discuss his results in the context of normative

[8] The term, *real data*, is used in the sense that it is data that describes real firms or data that is reported by real firms in contrast to data that is created to describe fictitious firms or reports.

theory. The study is similar to the income smoothing studies of the late 1960s and different from most other accounting empiricism prior to the 1960s in that Miller tested a hypothesis using classical inferential statistics.

Reserve for War Contingencies was a very frequently used account and there were many in the accounting profession that felt that it was an account that was particularly suited for *"profit smoothing."* Smoothing was not considered theoretically sound accounting during this period, thus Miller wanted to determine if the *Reserve for War Contingencies* was in fact being used as a smoothing device. Two sets of companies were used in the study. The first set consisted of the first forty companies listed alphabetically in 1941 on the New York Stock Exchange with assets in excess of $100 million. Miller identified fifteen possible smoothers from this set of companies for the years 1939 through 1942 but, unfortunately, he did not indicate how he identified these companies. Then, "in order to obtain a further impression of whether there is any relationship between the profitability of an enterprise and the size of its provisions for war contingencies and postwar adjustments," Miller identified forty companies that had made sufficient progress in contract renegotiation proceedings to be able to set up provisions for renegotiation settlements from a set of 1942 financial statements of sixty-six companies "known to be subject to renegotiation" [p. 249]. Thirty of the forty companies had charges to the *Reserve or Postwar Adjustments* in 1942 and these thirty companies provided the data for the remaining analyses.

Miller made a scatter diagram with one dimension being the ratio of net income after taxes and renegotiation to operating expenses and the other dimension was reserve provisions as a percentage of net sales. He then concluded that the scatter diagram indicated that there was no clear evidence to support the hypothesis that the greater the profitability, the greater the provision for war contingencies and postwar adjustments as a percentage of net sales. Next, Miller regressed net income as a percentage of the excess profits tax on reserve provisions as a percentage of net income. Although the correlation coefficient was .426 (significant at .05), Miller concluded, "these data do not afford any convincing support for the belief that, in general, the greater the amount of net income after taxes and renegotiation in relation to a corporation's excess-profits-tax credit, the larger will be the share of that net income devoted to reserve provisions" [p. 250].

Of course, there were significant design problems with the Miller study; however, these problems do not reduce the importance of this study. Rather, the significance of the Miller study is that it was a smoothing study in the hypothetico-deductive style which some authors have stated did not appear in the literature until 1967. By contrast, the Stans' [1948] article is more typical of empiricism in the 1940s and 1950s. Stans criticized the use of reserves, particularly contingency reserves, as smoothing devices and relied on a few anecdotes to support his position.

Seven of the thirty-four works discussed in this paper utilized actual financial data in some fashion. This is consistent with the Buckmaster and Theang [1991] assertion that the use of real data in pre-1950 accounting literature was common. Miller's [1944] article is, however, an outlier. Buckmaster and Theang did not find applications of inferential statistics in their sample of early empiricism.[9] For the other six papers which this study found to have used actual data, the analysis of data in these papers was similar to data used in other accounting literature prior to 1950.

DISCUSSION

Modern authors frequently state that income smoothing recognition was absent from accounting and business literature prior to the publication of Hepworth [1954]. This belief along with some other misconceptions about the origins of certain characteristics of income smoothing literature are easily dispelled. Thirty-four articles or books originally published between 1893 and 1953 in which income smoothing was either explicitly or implicitly considered have been identified and discussed. Income smoothing was central to early twentieth century debates about capital maintenance and secret reserves. Then, in the second quarter of the twentieth century, the smoothing characteristics of base-stock inventory methods were promoted as a primary advantage of LIFO and other variations of base-stock methods. Regulators (the APB) and other accounting authors focused on the "bad accounting practice" of arbi-

[9]The Miller paper is also an outlier in relation to other accounting literature of the period in that Miller has provided references to relevant, related literature. This sort of documentation was woefully inadequate in most accounting literature until well past 1950.

trary use of charges to "Reserves" immediately following World War II.

The literature reviewed in this paper focuses on two different types of accounting issues. The earliest literature focused on the use of secret reserves to minimize the volatility of income time-series. Variations of the type of behavior that created secret reserves continued to be discussed throughout most of the period encompassed by this paper, but the term "secret reserves" disappears. For example, Polak's [1930] recommendation that greater depreciation be charged in good years, Paton's [1932] attack on varying depreciation and accruals with the level of income, Andersen's opposition to the use of "Reserve for Contingencies" for equalizing income, and the Committee on Accounting Procedure's [1942, 1946, 1947A, 1947B] prohibition of the use of "Reserves" as a smoothing device are discussed within the context of accounting income measurement. Articles written prior to 1920 dealing with identical and similar behavior were written in the context of creating secret reserves. Of course, the ultimate use of the secret reserves was to smooth accounting income. The change in context roughly corresponds to the more general change in emphasis by accountants from the balance sheet to the income statement.

The literature sampled in this study does not contain adequate clues to unravel the relative roles of managers and accountants in the creation of secret reserves during the first fifty years of this century. However, Johnson and Meade [1906] identify non-accounting action apparently motivated by the desire to reduce the volatility of income time-series. This action would have been initiated by management. If the actions were in fact taken with the objective of smoothing income, then it is likely that management directed accountants to make accounting choices as well that would reduce income volatility.

As a consequence, the more arbitrary-appearing smoothing methods such as varying depreciation with income, arbitrary writeoffs of goodwill, and arbitrary expense charges to "Reserves" have disappeared from the list of acceptable practices. This disappearance of the more arbitrary-appearing practices suggests at least two determinants of GAAP. First, the dominance of the public accounting profession in determining GAAP during the pre-FASB era facilitated the rejection of methods that left auditors most exposed to legal and regulatory penalties. Because auditors prefer less legal exposure, the elimination of methods that appear arbitrary may seem advantageous. Con-

sider, for example, Dickinson's [1907] early appeal to the ICC for regulations specifying the proper treatment of railroad maintenance costs. Similarly, Andersen [1935] and the Committee on Accounting Procedure [1942, 1946, 1947a, 1947b] attacked the use of "Reserves" for smoothing income. Briston [1981, p. 59] argues, "The [standard-setting] process is dominated by auditors and by large accounting firms. As a consequence, the standards tend to reflect what is convenient for auditors to audit rather than what is most useful for those for whom the information is intended. In other words, there is a tendency towards law rather than economics, and towards rigidity rather than judgment. Another likely dominant variable that would have a very high correlation with auditors' desire to minimize legal exposure is the movement towards professionalization as recently described by Hines [1989]. Arbitrary practices do little to enhance public confidence and reduce the appearance of professionalism.

The rejection of the more arbitrary practices corresponds with the appearance of the second accounting issue related to income smoothing, the campaign to promote LIFO. The primary stimulus for the LIFO campaign appears to have been the tax consequences of the smoothing properties of LIFO. Income tax rates had become large enough by 1920 for management to be seriously concerned with tax policy. Then we find the series of articles promoting LIFO. After LIFO becomes acceptable for tax purposes in 1939, authors lose their enthusiasm.[10]

Recently Bricker [1988] made a plea for more recognition of early research in modern literature. It is not always clear whether the failure of modern authors to cite earlier work on the same subject is due to lack of awareness of the early work or the irrelevance of the early work. The statements of modern authors cited in the introductory paragraphs of this paper provides strong evidence that lack of awareness has been the determinant in the case of modern income smoothing research.

An important aspect of this paper is the demonstration of a weakness of citation analysis for research in accounting history. Gamble and O'Doherty [1985] advocated citation analysis for an accounting history research and demonstrated its application

[10] The position that the only valid argument for LIFO is that it reduces tax payments by smoothing income was stated forcefully by Devine [1941] and Moonitz [1953]. Devine reviewed the arguments advanced for LIFO. Also, LIFO was suggested as a surrogate for replacement cost accounting [Broad, 1948].

with income smoothing. As indicated earlier in this paper, they found no references earlier than Hepworth and concluded that he was the first writer to recognize smoothing. Yet the long history of income smoothing in accounting literature has been documented here. At least two factors contributed to Gamble and O'Doherty's failure to recognize the earlier literature. First, accounting articles before 1960 were generally very poorly documented. Also, a number of different terms were used for the phenomenon of concern, management attempts to reduce the volatility of accounting income. Based on the sampled papers, it appears that Moonitz [1953] and Hepworth [1953] are the first authors to use the term, " smoothing of income" or "income smoothing."

As a final conclusion, the failure of citation analysis to identify early smoothing papers and research should not be interpreted as invalidating the position of Gamble and O'Doherty [1985] and Previts, Parker, and Coffman [1990] and others that promote citation analysis as a tool for accounting history research. Rather, researchers should be cautious in how they use it, especially when working with pre-l96O accounting literature.

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APPENDIX

Terms Used to Identify Income Smoothing

Reference:	*Term*
Matheson (1893)	Did not use a substitute term, but discussed depreciation in proportion to profit.
Dicksee (1895)	Did not use a substitute term, but objects to the practice of expensing repairs during early years of use and then capitalizing them when they become large. (p. 50)
Dicksee (1903)	"fairly stable income" (p. 3)
Johnson and Meade (1906)	"accommodating maintenance expanses to the fluctuations in earnings" (p. 411)
Dickinson (1907)	"Operating charge . . . increased in times of prosperity and reduced or even temporarily abandoned when Surplus Income is insufficient." (p. 9)
Knight (1908)	Did not use a substitute term, but insists that if capital replacement is to occur, depreciation cannot be omitted just because profits for the period are low. (p. 191)
Joplin (1914)	"making the profits of the business appear to be regular" (p. 409)
Page (1916)	Described smoothing effect of methods, but did not use a substitute term.
Paton and Stevenson (1918)	"even flow of income" (p. 509)
Warshaw (1924)	"leveling gains and losses" (p. 31) "stabilizing profits and losses over a period of years (p. 34)
Crunder and Belcher (1930)	"substantially equalizing the effect" (p. 380)
Nash (1930)	"Stability of Income" (p. 312)
Polak (1930)	"partly counterbalances the shocks of market [for the firm's production] fluctuations and renders stabler the existence of the enterprise." (p. 463)
Dicksee (1931)	Described smoothing effect of methods, but did not use a substitute term.
Paton (1932)	"making fat years pay for lean years" (p. 261)
Kohler (1933)	"stable statistics" discussed within the context of accounting income.
Daniels (1934)	"equalizing income" (p. 41)
Andersen (1935)	"equalizing earnings" (p. 342)

Reference:	*Term*
Davis (1937)	"stabilizing indicated profits" (p. 392)
Nickerson (1937)	"hidden reserves which have been used to bolster earnings during lean years" (p. 351)
Sweet (1937)	"make-believe stability" (p. 400)
Committee on Federal Taxation, AIA (1938)	"steady stream of profits" (p. 313)
Sanders, *et al.* (1938)	"averaging profits over the years" (p. 16), "equalizing profits over period of prosperity and depression" (p. 15)
Cotter (1940)	"earnings stable in comparison with other concerns" (p. 17)
Committee on Accounting Procedure, AIA (1942)	"arbitrarily equalizing the reported income of different accounting periods." (p. 116)
Devine (1942)	"leveled income" (p. 115)
Committee on Accounting Procedure, AIA (1944), (1947A) (1947B)	"equalizing reported income" (pp. 215, 232, 257 respectively)
Miller (1944)	"profit smoothing" (p. 248)
Kohler (1947)	"profits-equalization" (p. 7)
Stans (1948)	"profit equalization" (p. 192)
Moonitz (1953)	"smoothing of profits" (p. 686) "relative stabilization of profit" (p. 686) "assigns a nonexistent stability to profit" (p. 690)